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US005845313A

5,845,313

[45] **Da** 

**Date of Patent:** 

[11] Patent Number:

Dec. 1, 1998

# [54] DIRECT LOGICAL BLOCK ADDRESSING FLASH MEMORY MASS STORAGE ARCHITECTURE

United States Patent [19]

[75] Inventors: **Petro Estakhri**, Pleasanton; **Mahmud Assar**, Morgan Hill, both of Calif.

[73] Assignee: Lexar, Fremont, Calif.

[21] Appl. No.: 509,706

Estakhri et al.

[22] Filed: Jul. 31, 1995

[52] U.S. Cl. ...... /11/103; /11/104; /11/136; 711/203

156, 203

# [56] References Cited

### U.S. PATENT DOCUMENTS

5,303,198	4/1994	Adachi et al	365/218
5,337,275	8/1994	Garner 36	5/189.01
5,341,330	8/1994	Wells et al	365/185
5,341,339	8/1994	Wells	365/218
5,353,256	10/1994	Fandrich et al 36	5/230.03
5,479,638	12/1995	Assar et al	711/103
5,485,595	1/1996	Assar et al	711/103
5,566,314	10/1996	DeMarco et al	711/103
5,581,723	12/1996	Hasbun et al	711/103
5,603,001	2/1997	Sukagawa et al	711/103

### FOREIGN PATENT DOCUMENTS

62-283496 12/1987 Japan .

62-283497 12/1987 Japan.

### OTHER PUBLICATIONS

Steven H. Leibson, "Nonvolatile, In-Circuit-Reprogrammable Memories", EDN, Jan. 3, 1993, pp. 89-102. S. Mehroa, J.H. Yuan, R.A. Cernea, W.Y. Chien, "EEPROM for Solid State Disk Applications", 1992 Symposium on VLSI Circuits Digest of Technical Papers, pp. 24-25. T. Nozaki, T. Tanaka, Y. Kijiya, E. Kinoshita, T. Tsuchiya, Y Hayashi, "A 1 MB EEPROM with MONOS Memory Cell for Semiconductor Disk Application", IEEE Journal of Solid-State Circuits, vol. 26, No. 4, Apr. 1991, pp. 497-501.

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Oppenheimer W. Donnelly; Maryam Imam

[57] ABSTRACT

A nonvolatile semiconductor mass storage system and architecture can be substituted for a rotating hard disk. The system and architecture avoid erase cycles each time information stored in the mass storage is changed. Erase cycle are avoided by programming an altered data file into an empty mass storage block rather than over itself as a hard disk would. Periodically, the mass storage will need to be cleaned up. These advantages are achieved through the use of several flags, and a map to correlate a logical block address of a block to a physical address of that block. In particular, flags are provided for defective blocks, used blocks, and old versions of a block. An array of volatile memory is addressable according to the logical address and stores the physical address

## 8 Claims, 5 Drawing Sheets

		Old/New Defect Flags Flags  Logical Used/Free Single/Sector Addresses Flags  Data								
			108	110	/112	/ 114	116		122	_/
102	130	106	<u>108</u>	ļ .			ļ			_
102	130	106	<u>108</u>				<u> </u>			
	0		0	0	0	0	0	0		
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	100							104		









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Search results for patent number: 5,845,313				
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Application Filing Date:	07-31-1995	Location:	FILE REPOSIT (FRANCONIA)	
Issue Date of Patent:	12-01-1998	Status:	Patented Case	
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09/841,522 filed on 04-23-2001 which has status of Patented claims the benefit of 0 09/850,790 filed on 05-07-2001 which has status of Pending claims the benefit of 08 10/071,972 filed on 02-05-2002 which has status of Pending claims the benefit of 08 10/077,647 filed on 02-14-2002 which has status of Pending claims the benefit of 08

09/521,420 filed on 03-08-2000 which has status of Patented claims the benefit of 0 09/620,544 filed on 07-21-2000 which has status of Abandoned claims the benefit of

10/152,969 filed on 05-20-2002 which has status of Pending claims the benefit of <u>08</u>